REMARKS

As a preliminary matter, it does not appear that the Petition and Amendment for Correction of Inventorship filed on November 4, 2005 has been entered. Accordingly, entry of the Petition and Amendment for Correction of Inventorship, and written confirmation of such entry, is once again respectfully requested. If additional copies of the papers as filed are needed, the Examiner should request Applicants to provide such additional copies in the next communication.

Claims 11-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 6,108,064 to Minoura et al. et al. and United States Patent No. 5,061042 to Nakamura et al. in view of United States Patent No. 6,781,759 to Wakita et al. Applicants respectfully traverse this rejection.

Applicants respectfully submit that the cited references, alone or in combination, fail to disclose or suggest all of the claimed features of the present invention. More specifically, the cited references, alone or in combination, fail to disclose or suggest a liquid crystal display device, including, *inter alia*, the claimed retardation plate that has "birefringence in a direction of the thickness" and the ratio Rf/Rlc in one of three different specific ranges in combination with a reflecting layer with projections and depressions having an appropriate one of three different average tilt angles, as defined in independent Claims 11, 12 and 13.

As correctly asserted by the Examiner, the Minoura et al. reference does not disclose the claimed retardation plate with birefringence in a direction of the thickness.

Accordingly, the Examiner relied upon the Nakamura et al. reference for this feature. In response, Applicants respectfully traverse this rejection for at least the following two reasons, as explained more fully below: (1) Applicants respectfully submit that one of ordinary skill in the art would not have utilized the retardation plate of Nakamura et al. in the device of Minoura et al. because Minoura et al. relates to a VA-type of LCD, while the plate of Nakamura et al. is intended for use in a TN-type or STN type of LCD; and (2) Even assuming *arguendo* that one would have used the retardation plate of Nakamura et al. in the device of Minoura et al., the resulting combination still lacks the claimed retardation plate with birefringence in the direction of thickness with one of the claimed ratios of Rf/Rlc because the plate of Nakamura et al. has birefringence in the in-plane direction, but not in the thickness direction, as defined in independent Claims 11-13.

First, Applicants respectfully submit that one of ordinary skill in the art would not have utilized the retardation plate of Nakamura et al. in the device of Minoura et al. because Minoura et al. relates to a vertically aligned (VA-type) of LCD (*see, e.g.*, col. 11, line 49), while the plate of Nakamura et al. is intended for use in a TN-type or STN type of LCD (col. 7, lines 7-16). As is well known in the art, in a VA-type of LCD, the liquid crystal molecules are vertically aligned (i.e., perpendicular to the substrates) under a no voltage condition. In contrast, with the TN-type and STN type of LCDs, the liquid crystal molecules are generally horizontally aligned (i.e., parallel to the substrates) under a no voltage condition. Applicants respectfully submit that due to this difference in molecular alignments, one of ordinary skill in the art would not have been motivated to take a retardation plate of

the device of Nakamura et al. (which is a TN-type or STN type of LCD) and utilized it in the device of Minoura et al. (which is a vertically aligned (VA-type) of LCD). Accordingly, for at least this reason, Applicants respectfully request the withdrawal of this §103 rejection of Claims 11-16.

Second, even assuming *arguendo* that one would of ordinary skill in the art have used the retardation plate of Nakamura et al. in the device of Minoura et al., the resulting combination still lacks the claimed retardation plate with birefringence in the direction of thickness with one of the claimed ratios of Rf/Rlc because the plate of Nakamura et al. has birefringence in the in-plane direction, but not in the thickness direction, as defined in independent Claims 11-13. More specifically, as explained below, the following passages of Nakamura et al. show how the retarder at issue can properly be considered as having birefringence in the in-plane direction, but not in the thickness direction.

(A) Column 1, lines 28-32 of Nakamura et al. disclose the following:

> The quarter retarder serves as a circular polarizer when it is combined with a linear polarizer in such a manner that the optical axis thereof makes an angle of 45° with respect to the planes of polarization of the linear polarizer.

Thus, as set forth above, the planes of polarization obviously exist in the in-plane direction, because of the term of "plane." Additionally, Nakamura et al. also teaches in lines 50-60 of column 1:

> all the conventional phase retarders made of these materials are λ/4 retarders whose retardation value (hereinafter referred to as R value) is in the vicinity of 135 nm. None of the above-cited publications refers to a process for producing a λ/2 retarder or a full retarder. The terminology "R value" as used herein means a product of a thickness (t)

of a film or sheet and a birefringence (Δn) of the film or sheet and can be represented by equation: $R = \Delta n \times t$

Since the planes of polarization exist in the in-plane direction, the $\lambda/4$ plate expresses birefringence to convert the incident linearly polarized light into circularly polarized light, which requires the birefringence (Δn) of the $\lambda/4$ plate also exists in the in-plane direction.

(B) Nakamura et al. discloses the following in lines 33-44 of column 4:

> An STN type liquid crystal display composed of a liquid crystal cell containing liquid crystals having a twisted angle of about 200° and an R value [a product of a birefringence (Δn) and a thickness (d)] of about 850 nm, which is sandwiched between parallel polarizers, with a phase retarder having an R_r value of about 550 nm being provided between the upper polarizing sheet and the liquid crystal cell in such a manner that the optical axis thereof makes an angle of about 45° with respect to the planes of polarization of the parallel polarizers, has improved image quality, i.e., it is substantially free from coloring.

As in the above discussion (A), since the planes of polarization of the parallel polarizers exist in the in-plane direction, the optical axis makes an angle of about 45° with respect to the planes of polarization of the parallel polarizers, the phase retarder having an R_r value of about 550 nm also has a birefringence(Δn) in the in-plane direction.

(C) Further, Nakamura et al. discloses the following in lines 50-59 of column 7:

> A refractive index in the direction of the optical axis (n_{D1}) and a refractive index in the direction perpendicular to the optical axis (n_{D2}) were measured using D-line of sodium (589.3 nm) and assigned to equation (5) shown below to calculate an R value at 589.3 nm (R_D).

$$R_{D1} = | n_{D1} - n_{D2} | \times d \qquad (5)$$

wherein d represents a thickness (nm) of a phase retarder.

$| n_{D1} - n_{D2} |$ can be considered as the same as Δn, which means the value R can be calculated in the equation shown in discussion (A). Therefore, the values R are defined as R value of the retardation plate having a birefringence (6.n) in the in-plane direction.

In Nakamura et al., liquid crystals are horizontally-oriented, and the retardation plate with a retardation in the in-plane direction is arranged in such a manner that the optical axis thereof makes an angle of about 45° with respect to the planes of polarization. In contrast, the present invention of independent Claims 11-13 has a feature in which liquid crystals are vertically-oriented, and the retardation plate has a retardation in a vertical direction to a substrate that is arranged regardless of the planes of polarization. Horizontally-oriented liquid crystals and vertically-oriented ones are different in the manner of optical compensation (i.e., direction a retardation plate expresses birefringence in). Accordingly, it makes no sense to compare the values of R of a liquid crystal layer with a retardation plate since the direction a retardation plate expresses birefringence in is ignored. Thus, it is not true that the optimum or workable ranges of horizontally-oriented liquid crystals and vertically-oriented ones are disclosed in the cited reference.

Accordingly, for at least these additional reasons, Applicants respectfully request the withdrawal of this §103 rejection of Claims 11-16.

For all of the above reasons, Applicants request reconsideration and allowance of the claimed invention. Should the Examiner be of the opinion that a telephone conference would aid in the prosecution of the application, or that outstanding issues exist, the Examiner is invited to contact the undersigned attorney.

If a Petition under 37 C.F.R. §1.136(a) for an extension of time for response is required to make the attached response timely, it is hereby petitioned under 37 C.F.R. §1.136(a) for an extension of time for response in the above-identified application for the period required to make the attached response timely. The Commissioner is hereby authorized to charge fees which may be required to this application under 37 C.F.R. §§1.16-1.17, or credit any overpayment, to Deposit Account No. 07-2069.

Respectfully submitted,

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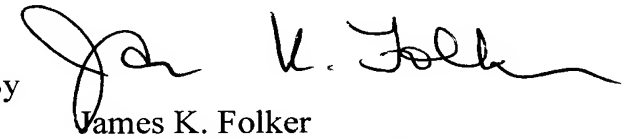
By 

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October 20, 2008

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